
Specifications

Data characteristics

The RILC provides the following communication characteristics:

Data type	ASCII (ANSI standard X3.4)
Synchronization	Asynchronous, start-stop (ANSI standard X3.15)
Number of bits	8 bits including parity
Parity	Treated as data and transported unchanged
Data rate	110, 150, 300, 600, 1200, 2400, 4800, 9600, and 19200 bits per second
Stop bits	2 bits for 110 bps 1 bit for all other speeds
Handshake	Full duplex
Data Terminal Interface	RS-232/CCITT V.24

The RILC transmits and receives at a rate of +0.9 percent above the bit rates to allow operation with data equipment that transmits above the nominal bit rate without data loss.

In the keyboard dialing (KBD) mode, the default parity is space and can be changed to even, odd, or mark with the autoparity feature. In the data transfer mode, the parity bit is passed transparently as the eighth bit. When the calling data module specifies 7 bit with even or odd parity, the parity bit is regenerated by the RILC before data is passed to the external data equipment.

Parameter exchange

During a call setup with another data module, the characteristics of the called end are automatically configured according to those of the calling end unless an incompatible configuration is specified.

During the keyboard dialing (KBD) mode, the RILC will autobaud and autoparity so that the menu and prompts are properly displayed on the user's terminal. The parity stays unchanged until specifically changed by another autoparity operation.

When a call is made to the RILC from another data module, the RILC configures its characteristics according to the parameters sent down from the other module regardless of whether it has autobauded or not. If the far end specifies 7 bit plus parity, the parity bit will be reconstructed. The RILC rejects calls with certain parameter mismatches such as calls specifying synchronous, half duplex, or 8 bit plus parity.

The RILC permits re-down-line-load (RDLL) from the far end, but does not provide for initiating RDLL.

Data equipment interface

A subset of the EIA signals and their CCITT V.24 equivalents are shown in **Table 1**. This subset is found on asynchronous data equipment, although not all leads are used.

Table 1
RS-232-C signals as applicable to asynchronous transmission

Circuit designation					
EIA	Common	CCITT	Pin no. (DB-25)	Signal source	Signal name
AA	FG	101	1		Frame ground
AB	GND	102	7		Signal ground
BA	TXD	103	2	DTE	Transmit data
BB	RXD	104	3	DCE	Receive data
CA	RTS	105	4	DTE	Request to send
CB	CTS	106	5	DCE	Clear to send
CC	DSR	107	6	DCE	Data set ready
CD	DTR	108.2	20	DTE	Data terminal ready
CE	RI	125	22	DCE	Ring indicator
CF	CD	109	8	DCE	Received line signal detector

Signals supported

The RILC supports only a subset of the listed RS-232-C signals, as shown in the following table. This is because only 8 leads per port are brought out through the backplane connector for a total of 32 leads per card slot on the double density shelf. Signal collisions with adjacent cards prevent support of RILC in single density shelves.

Signal Supported		Signal Direction	
DB-25	Signal name	DCE mode	DTE mode
Pin 2	TD	In	Out
Pin 3	RD	Out	In
Pin 5	CTS	Out	In
Pin 6	DSR	Out	In
Pin 7	GND	—	—
Pin 8	DCD	Out	In
Pin 20	DTR	In	Out
Pin 22	RI	Out	In

Pin 1 (FG) and Pin 4 (RTS) are not supported by the RILC.

Pin 1 (FG) may be supported by the data equipment, but is generally not used by the wire in the interconnecting cable.

Pin 4 (RTS) will be assumed ON all the time by the RILC in the DCE mode since half duplex is not supported. In the DTE mode, since the user DCE is most likely to be a modem and RTS is normally ignored by full duplex modems, it is permissible to drop the RTS signal support. Strapping in the interconnecting cable to force RTS on can be used for special situations.

Operating distance

RS-232-C is defined for speeds up to 19,200 baud at a maximum distance of 50 ft to prevent signal distortion. This specification is based on cable capacitance of 50 pF per foot and total line capacitance of 2500 pF. The capacitance of a typical 24 gauge and 26 gauge inside cable is shown below:

Wire Gauge	Capacitance/ft
24 AWG	24 pF
26 AWG	15 pF

To extend the distance beyond 50 ft, shielded cable, reduced bit rate low capacitance cable, and continuous cable runs can be considered.

The RILC is powered completely from the peripheral shelf backplane. The power requirements (shown below) are obtained from the -48 V or -52 V backplane supply, except for $\pm 6\text{ V}$, which is provided by the peripheral buffer.

Voltage	Current	
	Nominal	Maximum
+5 V	0.9 A	1.3 A
+6 V	12 mA	21 mA
-6 V	14 mA	27 mA
+9 V	75 mA	100 mA
-9 V	75 mA	100 mA
-48 V	250 mA	320 mA
-52 V	250 mA	320 mA

The card dissipates less than 15 W of heat, which must be considered when the system heat dissipation is being determined.

Product compatibility

The RILC is compatible with all existing Meridian 1 data products (AILC, AIM, AILU, ADM, SADM, ADO, MCDS, ASIM, MPDA, and CIM/VT100). It is also compatible with DTI/CPI, RPE, and any combination.

Environment

The RILC is designed to operate without degradation under the following conditions:

Specification	Operating	Storage
Ambient temperature	0°C to 60°C	−40°C to +70°C
Relative humidity (noncondensing)	5% to 95%	5% to 95%

Reliability

The RILC has a predicted mean time between failure (MTBF) of ten years at 40°C.

Self-diagnostics

When the card is powered up, each unit of the RILC executes a self-diagnostic routine. The six faceplate LEDs indicate the results of the diagnostics. At power-up, all six LEDs light momentarily and any malfunctioning LED is visually checked. If the hardware passes the self-diagnostics, the LEDs go off. If a unit fails the diagnostics, the LED blinks on and off two times per second indefinitely. Pressing the unit selection switch while the LED is blinking puts the LED into monitor mode, showing the RS-232 status. The LED returns to the diagnostic mode when the card is powered down and up again.

The top two LEDs (marked SD and RD) in the group indicate the diagnostic result of unit 0 of the RILC. The next two LEDs (marked DTR and DSR) indicate the result of port 1 and so on. If all four units pass the diagnostics, all the LEDs will be off at the end of the diagnostics. At this time, push the selection switch to enter monitor mode.

EIA control lead characteristics

The functional and procedural requirements of the EIA leads vary under different circumstances. To initiate KBD, a terminal or personal computer (PC) may require DSR, DCD, or Clear-To-Send (CTS) or be ON. However, a host computer may require the DCD and DSR leads to reflect the true condition of the communications channel to provide security to each individual user. Due to these conflicting requirements, the same option switches, namely DCE/DTE control and Host/Terminal control, also specify the interaction of the EIA leads during the call setup state. After a call is established, DSR, DCD, CTS, and DTR are usually on.

The RILC considers a “BREAK” condition (continuous Space condition) lasting longer than 1.5 s as DTE or DCE not ready, and releases an established call. Breaks lasting less than 1.2 s are passed transparently as data to the far end. An Open line (zero voltage) is treated as OFF on the control leads but as mark on the data leads. This ensures that a physical disconnect of a DTE or DCE from the Line Card always results in a call disconnect for security.

EIA leads protection

The RS-232-C leads are protected against foreign and transient voltages before exiting to the backplane. A short to a 500/2500 line, or an SL-1 line, with any of the interface leads does not cause any damage to the RILC. Because the protecting circuitry reduces hazardous voltages on the line, the external DTE or DCE is protected when properly connected to the RILC.